```
**********************************************************
*                                                        *
*          QQQQQQQ     ZZZZZZZZZ   XX      XX          *
*        QQQQQQQQQ     ZZZZZZZZ     XX    XX           *
*        QQ      QQ         ZZ       XX XX             *
*        QQ      QQ        ZZ          XXX              *
*        QQ      QQ       ZZ           XXX              *
*        QQ    QQ QQ     ZZ            XX XX            *
*        QQQQQQQQQQ     ZZZZZZZZ      XX   XX          *
*         QQQQQQQQ     ZZZZZZZZZ    XX     XX          *
*                QQ                                      *
*                                                        *
**********************************************************
```


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Alex F. Burr,K5XY
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Ambrose 'Bo' Barry,W4GHV/5
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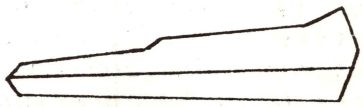
COMING UP:
Direction Finding Program
Antenna Design Program (7 ant. types)
10 Minute Timer Program
XLR8 Fast Load 'Improvements'
Loaded Dipole Design Program
Mule keytops Review
Scientific Software's Assembler
(see ads inside this issue)
Votrax Speech Synthesizer
and more

****

A '2 (or 3) OUNCER' FOR SURE!

TS1000 64K INSIDE!! ZX81



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MEMOTEXT WORD PROCESSOR
BY BILL HARRIS-K5MIL

MEMOTEXT is a word processing program by MEMOTECH written especially to run on the ZX-81, TIMEX/SINCLAIR 1000 computers. The program comes hardcoded on a ROM in a standard MEMOTECH module that plugs onto the expansion interface, so the program is instantly available with power on. There is a toggle switch on the module to switch it on and off independent of the system power.

MEMOTEXT supports both the MEMOTECH RS232 and MEMOTECH Centronics type of interfaces, so a wide variaty of printers can be used.

The keyboard input routine has been redefined. MEMOTECH uses their own keyboard debounce routine so that input can be done at typing speed. Upper and lower case are as on a standard typewriter, unshifted keys give lower case and shifted keys give upper case. Upper case letters are displayed in inverse video on the screen. The space key gives a space regardless of the shift key. The cursor is moved with the arrow keys (shifted 5, 6, 7, and 8), and key repeating is supported.

The screen is "word-wrapped" so that a word is never split at the end of a line. Even though the screen is only 32 characters per line, the line when printing can be set for any length your printer can handle. The number of lines per page can also be set. MEMOTEXT defaults to 66 characters per line and 60 lines per page. Printer control commands can be inserted within the text so you can take advantage of your printers capabalities, such as **emphasising** or <u>underlining.</u> You can also set up prompts within the text, then when the file is printed you will be prompted for certain information. This allows you to set up a form letter and then personalise it to suit a specific need. Documents can be justified so that the right margin is even.

Search, exchange, and move functions are supported. You can search for a particular word and have it replaced with another, and blocks of text can be moved from one location to another within the file. Headings and page numbering are also supported.

DATA FILES are also supported, for example you can set up a DATA FILE with a mailing list to which you wish to send a standard form letter. Then upon printing, a copy of the letter will be printed for each entry in the data file containing the names and addresses, or you may select only certain entries to be printed.

The TEXT and DATA FILES can be loaded and saved individually or all at the same time. You can have several files in memory at the same time, and loading another file will not overlay any existing ones. If there is not enough space in memory to load a file MEMOTEXT will issue a "SHORT OF SPACE" message. All files in memory may be displayed by name with a display command, also any file may be deleted from memory by a delete command.

The manual is well written and fairly easy to follow. One improvement that could be made would be to include a list of the possible error messages, their meaning and the corrective action to be taken. These must be dug out of the text as the manual is now written.

Overall I give MEMOTEXT a very high rating. It contains features I would expect to find only in more expensive word processors, and at a price of $49.95, it is truly a bargin.

******

This article was formatted and printed using MEMOTEXT.

```
  1 REM "ACTIVE
 BPF "
  2 REM TERRY S
IMONDS WB4FXD
  3 REM PO BOX
1558
  4 REM EDGARTO
WN, MA 02539
  8 FAST

  9 PRINT "CHEC
KSUM=";USR 32717
 10 PRINT "(8K
ROM/16K RAM)"
 11 PRINT ,,"PR
ESS ANY KEY TO C
ONTINUE"
 12 PAUSE 40000
 13 CLEAR
 14 LET R3=0
 15 CLS
 18 SLOW
 20 REM CHOOSES
 FOLLOW
 22 PRINT AT 0,
5;"ACTIVE BPF FOL
LOW"
 25 PRINT ,,"1-
-SPECIFY R1, R3,
 R5, AND C"
 30 PRINT "2--S
PECIFY G, Q, F,
 AND C"
 35 PRINT "3--S
PECIFY R1, Q, F,
 AND C"
 40 PRINT "4--S
CALE F BY CHANGI
NG C"
 50 PRINT "5--S
CALE F BY CHANGI
NG R"
 60 PRINT "6--S
CALE Z OF COMPON
ENTS"
 70 PRINT "7--S
CALE F BY CHANGI
NG R3"
 75 PRINT "8--S
HOW SCHEMATIC"
 76 PRINT "9--C
ASCADED CALCULAT
IONS"
 80 PRINT ,,"EN
TER CHOICE;"
 85 PRINT AT 20
,0;"ENTER ""S""
TO SAVE TO TAPE"
 90 INPUT C$
 110 IF C$="1" T
HEN GOTO 500
 120 IF C$="2" T
HEN GOTO 2000
 130 IF C$="3" T
HEN GOTO 3000
 140 IF C$="4" T
HEN GOTO 5000
 150 IF C$="5" T
HEN GOTO 5300
 160 IF C$="6" T
HEN GOTO 5600
 170 IF C$="7" T
HEN GOTO 6000
 180 IF C$="8" T
HEN GOTO 7100
 185 IF C$="9" T
HEN GOTO 9000
 190 IF C$="S" T
HEN GOTO 9999
 200 GOTO 90
 499 REM PROC 1
 500 CLS
 505 PRINT "YOU
HAVE CHOSEN PROC
EDURE--1"
 508 PRINT ,,"EN
TER R1, R3, R5 (
OHMS),"
 509 PRINT "AND
 C (UF)"
 513 PRINT ,,"R1
=";
 515 INPUT R1
 520 PRINT R1;"
OHMS"
 525 PRINT "R3="
;
 540 INPUT R3
 550 PRINT R3;"
OHMS"
 555 PRINT "R5="
;
 570 INPUT R5
 580 PRINT R5;"
OHMS"
 585 PRINT "C=";
 600 INPUT C
 610 PRINT C;" U
F"
 615 GOSUB 7000
1010 LET C=C*10*
*-6
1020 LET G=.5*R5
/R1
1030 LET Q=SQR (
((R1*R5)+(R3*R5)
)/(4*R1*R3))
1040 LET F=Q/(2*
PI*R1*C*G)
1050 GOTO 4000
1999 REM PROC 2
2000 CLS
2001 PRINT "YOU
 HAVE CHOSEN PROC
EDURE--2"
2002 PRINT ,,"EN
TER G, F (HZ), Q
, AND C (UF)"
2003 PRINT ,,"G=
";
2004 INPUT G
2005 PRINT G
2006 PRINT "F=";
2007 INPUT F
2008 PRINT F;" H
Z"
2009 PRINT "Q=";
2010 INPUT Q
2012 PRINT Q
2013 PRINT "C=";
2014 INPUT C
2016 PRINT C;" U
F"
2017 GOSUB 7000
2020 LET W=2*PI*
F
2025 LET C=C*10*
*-6
2030 LET R1=Q/(W
*G*C)
2040 LET R5=2*G*
R1
2050 LET R3=(R1*
R5)/(4*Q*Q*R1-R5
)
2060 IF R3<0 THE
N GOTO 7500
2065 GOTO 4000
2999 REM PROC 3
3000 CLS
3001 PRINT "YOU
 HAVE CHOSEN PROC
EDURE--3"
3005 PRINT ,,"EN
TER R1 (OHMS), W
, F (HZ),"
3006 PRINT "AND
C (UF)"
3008 PRINT ,,"R1
=";
3010 INPUT R1
3012 PRINT R1;"
OHMS"
3013 PRINT "Q=";
3014 INPUT Q
3016 PRINT Q
3017 PRINT "F=";
3018 INPUT F
3020 PRINT F;" H
Z"
3021 PRINT "C=";
3022 INPUT C
3024 PRINT C;" U
F"
3025 GOSUB 7000
3030 LET W=2*PI*
F
3035 LET C=C*10*
*-6
3040 LET G=Q/(W*
R1*C)
3045 LET R5=2*G*
R1
3050 LET R3=R1*R
5/(4*Q*Q*R1-R5)
3060 IF R3>0 THE
N GOTO 4000
3065 IF R3<0 THE
N GOTO 7500
3999 REM PRINT R
ESULTS
4000 CLS
4001 PRINT "FOR
THIS DESIGN;"
4020 PRINT ,,"R1
=";R1;" OHMS"
4030 PRINT "R3="
;R3;" OHMS"
4040 PRINT "R5="
;R5;" OHMS"
4050 PRINT "C=";
C*10**6;" UF"
4060 PRINT "F=";
F;" HZ"
4070 PRINT "Q=";
Q
4080 PRINT "G=";
G
4090 PRINT ,,"EN
TER ""S"" FOR SC
HEMATIC"
4100 PRINT "ENTE
R ""N"" FOR NEW
CALCULATION"
4150 INPUT M$
4160 IF M$="N" T
HEN GOTO 15
4165 IF M$="S" T
HEN GOTO 7100
4170 GOTO 4150
4999 REM PROC 4
5000 IF R3>0 THE
N GOSUB 8000
5003 IF R3<0 THE
N GOTO 7500
5010 IF R3=0 THE
N GOTO 7200
5030 PRINT ,,"EN
TER NEW FREQ IN
HZ"
5035 INPUT FO
5040 PRINT ,,"NE
W FREQ=";FO;" HZ
"
5041 GOSUB 7000
5045 LET C=C*(F/
FO)
5050 LET F=FO
5060 GOTO 4000
5299 REM PROC 5
5300 IF R3>0 THE
N GOSUB 8000
5303 IF R3<0 THE
N GOTO 7500
5305 IF R3=0 THE
N GOTO 7200
5310 PRINT ,,"EN
TER NEW FREQ IN
HZ"
5315 INPUT FO
5320 PRINT ,,"NE
W FREQ=";FO;" HZ
"
5322 GOSUB 7000
5327 LET D=F/FO
5330 LET R1=R1*D
5340 LET R3=R3*D
5350 LET R5=R5*D
5360 LET F=FO
5370 GOTO 4000
5599 REM PROC 6
5600 IF R3>0 THE
N GOSUB 8000
5603 IF R3<0 THE
N GOTO 7500
5605 IF R3=0 THE
N GOTO 7200
5610 PRINT ,,"EN
TER NEW C IN UF"
5612 INPUT CO
5614 PRINT ,,"NE
W VALUE OF C=";C
O;" UF"
5616 GOSUB 7000
5620 LET D=(CO*1
0**-6)/C
5630 LET C=CO*10
**-6
5640 LET R1=R1/D
5650 LET R3=R3/D
5660 LET R5=R5/D
5670 GOTO 4000
5999 REM PROC 7
6000 IF R3>0 THE
N GOSUB 8000
6003 IF R3<0 THE
N GOTO 7500
6005 IF R3=0 THE
N GOTO 7200
6010 PRINT ,,"EN
TER NEW FREQ IN
HZ"
6015 INPUT FO
6020 PRINT ,,"NE
W FREQ =";FO;" H
Z"
6025 GOSUB 7000
6030 LET Q=FO*2*
PI*R1*C*G
6040 LET R3=(R1*
R5)/(4*Q*Q*R1-R5
)
6060 LET F=FO
6070 GOTO 4000
6999 REM ERROR D
ISPLAY ROUTINE
7000 PRINT AT 15
,8;"DATA ENTERED
"
7010 PRINT "ENTE
R ""C"" TO COMPU
TE"
7020 PRINT "ENTE
R ""R"" TO RE-EN
TER DATA"
7030 INPUT M$
7040 IF M$="C" T
HEN RETURN
7050 IF M$="R" T
HEN GOTO 15
7060 GOTO 7030
7098 REM PROC 8
7099 REM PLOT SC
HEMATIC
7100 CLS
7102 FAST
7105 PRINT AT 0,
11;"ACTIVE BPF"
7110 LET Y=34
7115 FOR X=20 TO
 52
7120 GOSUB 7196
7125 LET Y=28
7130 FOR X=36 TO
 50
7135 GOSUB 7196
7140 LET Y=26
7145 FOR X=8 TO
36
7150 GOSUB 7196
7155 LET Y=24
7160 FOR X=50 TO
 56
7165 GOSUB 7196
7170 LET Y=22
7175 FOR X=32 TO
 36
7180 GOSUB 7196
7185 LET Y=20.
7190 FOR X=36 TO
 50
7192 GOSUB 7196
7194 GOTO 7300
7196 PLOT X,Y
7197 NEXT X
7198 RETURN
7199 REM ARRAY
SUBROUTINE
7200 FOR A=1 TO
10
7201 PRINT AT 15
,0;"SHARP SCALE
 PLOTTING CHART"
;"ENTER DATA AT CH
OICE 1, 2, OR 3"
;AT 20,0;"
 "
7202 FOR B=1 TO
3
7203 NEXT B
7204 PRINT AT 15
,0;"
 "
7205 NEXT A
7230 GOTO 15
7299 REM PLOT SC
HEMATIC
7300 LET X=20
7305 FOR Y=26 TO
 34
7310 GOSUB 7390
7315 LET X=22
7320 FOR Y=16 TO
 26
7325 GOSUB 7390
7330 LET X=30
7335 FOR Y=26 TO
 34
7337 GOSUB 7390
7339 LET X=32
7340 FOR Y=16 TO
 22
7345 GOSUB 7390
7350 LET X=36
7355 FOR Y=20 TO
 28
7360 GOSUB 7390
7365 LET X=50
7370 FOR Y=20 TO
 28
7375 GOSUB 7390
7380 LET X=52
7385 FOR Y=24 TO
 34
7386 GOSUB 7390
7388 GOTO 7405
7390 PLOT X,Y
7395 NEXT Y
7400 RETURN
```

```
7404 REM ACTUAL
VALUES
7405 PRINT AT 8,
2;"IN";TAB 6;"R1
";TAB 13;"C";TAB
 19;"+"
7410 PRINT AT 4,
13;"C"
7415 PRINT AT 6,
15;"R5"
7420 PRINT AT 9,
20;"LM324";TAB 2
8;"OUT"

7425 PRINT AT 11
,11;"R3"
7430 PRINT AT 10
,19;"-"
7435 PRINT AT 14
,10;"RTN";TAB 15
;"RTN"

7436 SLOW

7439 REM PRINT U
SING
7440 IF R3=0 THE
N GOTO 7478
7445 PRINT AT 13
,0;"Q=";INT (Q*1
00+.5)/100

7450 PRINT "G=";
INT (100*G+.5)/1
00

7455 PRINT "C=";
C*10**6;" UF"
7460 PRINT "R1="
;R1;" OHMS"
7465 PRINT "R3="
;R3;" OHMS"
7470 PRINT "R5="
;R5;" OHMS"
7475 PRINT "F=";
F;" HZ";TAB 13;"
ENTER ""N""

 FOR NEW CALCU
LATION"
7477 GOTO 7480

7478 PRINT AT 17
,0;"ENTER ""N""
FOR DESIGN PROCE
DURE"
7480 INPUT X$

7482 IF X$="N" T
HEN GOTO 15
7484 GOTO 7480

7499 REM RESTORE
 ERR
7500 CLS

7505 PRINT AT 0,
8;"RESTORE ERROR
"
```

```
7510 PRINT ,," R
ESULTS WILL BE M
EANINGLESS"

7520 PRINT ,,"EN
TER ""R"" TO RE-
ENTER DATA"

7530 PRINT "ENTE
R ""C"" IF YOU M
UST..."

7540 INPUT G$

7550 IF G$="C" T
HEN GOTO 4000
7560 IF G$="R" T
HEN GOTO 15
7570 GOTO 7540

7999 REM PRINT R
ESULTS
8000 CLS

8010 PRINT "R1="
;R1;" OHMS"
8020 PRINT "R3="
;R3;" OHMS"
8030 PRINT "R5="
;R5;" OHMS"
8035 PRINT "C=";
C*10**6;" UF"
8040 PRINT "Q=";
Q
8050 PRINT "G=";
G
8060 PRINT "F=";
F;" HZ"
8070 RETURN

8999 REM PROGRA
M

9000 CLS

9002 IF R3=0 THE
N GOTO 7200
9020 GOSUB 8000

9030 PRINT ,,"EN
TER NO. OF IDENT
ICAL SECTIONS: "
;
9040 INPUT N

9050 PRINT N

9055 GOSUB 7000

9060 LET B=2+(EX
P (LN 2/N)-1)/(Q
*D)

9070 LET W1=.5*B
+.5*SQR (B*B-4)
9080 LET W2=.5*B
-.5*SQR (B*B-4)
9090 LET QC=SQR
 W1-SQR W2
     LET QC=1/QC
```

```
9105 CLS

9110 PRINT ,,"SY
STEM Q=";QC
9120 LET GC=EXP
(N*LN G)
9130 PRINT "SYST
EM GAIN=";GC
9140 PRINT ,,,,"
ENTER ""S"" FOR
1-SECT SCHEMATIC
"
9150 PRINT "ENTE
R ""N"" FOR NEW
CALCULATION"

9160 INPUT M$

9170 IF M$="S" T
HEN GOTO 7100
9180 IF M$="N" T
HEN GOTO 15
9190 GOTO 9160

9988 STOP

9989 REM SAVE RO
UTINE
9990 CLS

9991 PAUSE 800

9995 CLEAR

9996 FAST

9997 SAVE "ACTIV
E BPF"
9998 GOTO 1

9999 GOTO 9990
```

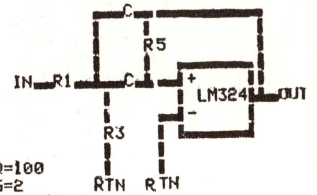
ACTIVE BPF CASCADE

1--SPECIFY R1, R3, R5, AND C
2--SPECIFY G, Q, F, AND C
3--SPECIFY R1, Q, F, AND C
4--SCALE F BY CHANGING C
5--SCALE F BY CHANGING R
6--SCALE Z OF COMPONENTS
7--SCALE F BY CHANGING R3
8--SHOW SCHEMATIC
9--CASCADED CALCULATIONS

ENTER CHOICE:

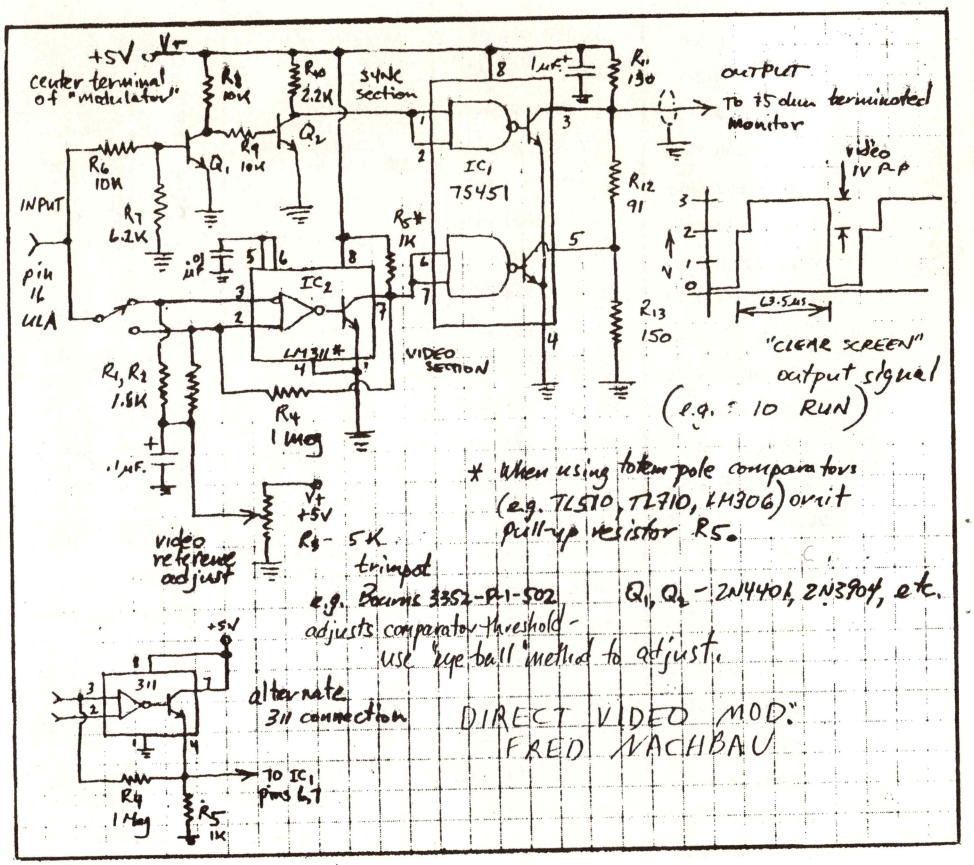
ENTER "S" TO SAVE TO TAPE

ACTIVE BPF



Q=100
G=2
C= 001 UF
R1=7957747.2 OHMS
R3=795.8543 OHMS
R5=31830989 OHMS
F=1000 HZ

ENTER "N"
FOR NEW CALCULATION



Active Bandpass Filter Program

by

Terry Simonds, WB4FXD

This neat program lets you design active bandpass filters (for CW, RTTY, etc) and actually draws a schematic of the results. Load time is about 3min 10sec. When it is loaded, you will be presented with a menu that gives nine options. A short explanation of each might be in order:

Option & Description

1. Input values of R & C; computes center freq., Q, and gain
2. Input values of gain, Q, center freq, & C; computes values for C
3. Input one R, Q, center freq., & C; computes remaining R and gain
4. Input a new value for C; computes new center freq.
5. Input new values for R's; computes new center freq., Q, & gain
6. Input new C; computes new R's
7. Input one new R; computes its effect
8. Draws a schematic of the filter being designed, with component values assigned
9. Computes the Q & overall gain of cascaded sections

This program, originally appeared in the January 1983 issue of 73 Magazine, authored by Taylor, WD4HPC. It was translated into ZX81 format and options 7 & 8 added. The resultant circuits actually work and I am using a four section filter on my RTTY demodulator, and it prints 100 WPM through thick & thin on the commercial frequencies and ham bands. The humble author concludes.. "This was my first attempt to do anything this comprehensive, and I am sure I have made a few blunders. I only got the TS1000 for Christmas. But it works. Ha!" By the way, you need 16K for this one. The listing follows on the next convenient page.

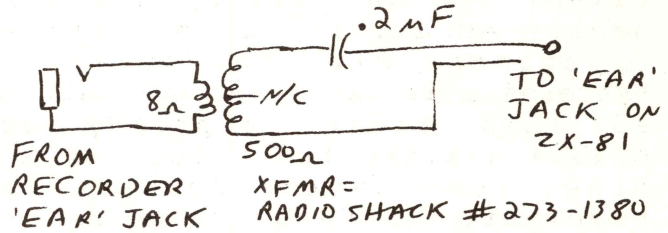
E-Z Load Modification

by

Edwin Solov, K2SE

Based on the information on the recorder to computer interface for the ZX81 which appeared in the Jan 83 issue of QZX, I have experimentally devised the following simple matching network for my machine. It consists of only two parts aside from the connectors and enclosure - a 0.1 or 0.2 uF capacitor and an audio output transformer. The transformer is used in an attempt to match the low impedance audio output of the recorder to the higher input impedance of the ZX81's 'ear' input port. The capacitor was added after I observed on a scope that the signal input from the recorder was riding on a substantial 60 Hz noise base. The capacitor removed that source of irritation very well. Since using this circuit, I have experienced a substantial improvement in the reliability of the 'LOAD' operation. I did find, however, that this modification required me to increase by about 10% the volume setting of the recorder to obtain dependable performance. (This mod may not 'be for you' if you are already having to set the volume control up pretty high already..Ed..)

I built the whole thing on a terminal strip, which I enclosed in an empty pill container. The pills were necessitated by my frequently frustrating attempts to LOAD the ZX81. Since then I have needed less pills and have been loading my computer with greater ease.



Direct Video Output (Modified)

by

Fred Nachbau, *****

Here's a video reverse/clean-up mod that started as W4MHQ's "Direct Video Output" in QZX VOL.1 NO. 2. Like W4MHQ's, this circuit uses a 75451 to do the output switching. The values of the resistors that define the pedestal and P-P video levels of the output were changed to very nearly duplicate the video signal at pin 16 of the ULA, and provides a higher (1v) P-P video level as preferred by most commercial monitors.

The sync separator is also similar except that transistors of the same polarity are used (NPN) and the circuit is less prone to changes; bargain (my favorite brand) general-purpose silicon NPN's work fine. Also it doesn't require an input coupling capacitor. If your machine has not been expanded past, say, 16K, even direct connection to ULA pin 16 will drive the monitor adequately if you don't have to have the reverse video. But if you've added other peripheral boards, the video signal itself can get 'dirty'. Although the Moire-like VHF interference vanishes using this method, expanded machines can show vertical streaks that show subtle (and annoying) changes. This 'hash' also gets through a video amp, and in my hookup of W4MHQ's circuit it actually seemed worse.

This circuit uses a commonly available 311 comparator IC to clean up the video signal before going to the 75451 IC. Just about any reasonably fast comparator will work. The 311 has a longer turn-off than turn-on time, so in this connection white -on- black characters show up faster than the black -on- white. I prefer it this way, but you might want to use the alternate emitter follower connection, in which off and on times, though longer, are more nearly equal. You might want to experiment with the values of hysteresis resistor R4 and pull up R5; this circuit is pretty much stable against the values of the other components. Tucked away somewhere in this issue is the schematic of what I came up with.

Editor's Doings

Well, we made it both ways without a hitch. Even the weather cooperated, keeping the humidity & mosquitos to a minimum. I did get my annual exercise of the car's windshield wipers though. Returning to good ol' New Mexico, I found the mailbox full of new subscribers and lots of good articles. I don't know where all of you nice and wonderful subscribers are coming from, considering the small amount of advertising we have done. This brings up several topics.

First, for you newcomers, QZX has already had in it's meager 6 months, many articles relating to amateur radio as well as a variety of other useful information. So, I recommend you get all the back issues now. We ran out of the few we had, and when the print shop has a special we can get some printed. I have about 20 sets ready now. They are for sale at $1.50/ single issue, or $1/issue for a 'set' (specify which issues) sent 4th class mail. Add $2.00 if you insist on first class mailing. As for an index of what we have had, I am working on it. As for program (on tape) availability, we haven't had time to get started on it. Some of the programs printed in QZX have been 'advertised' by their authors. An organized effort to make available the others is definitely needed. It should be done in the 'low-profit' spirit of QZX. Any volunteers? Someone asked about 'program exchange'. Well, as you know, copyrighted software cannot be legally exchanged. What you do 'in the privacy of your bedroom' is your own business. So, QZX cannot conduct or encourage illegal software exchange. I think the QZX programs not offered for sale by their authors would be 'fair game' for exchanging.

We still have a lot of tapes to return and will do that soon, as well as 'settling up' with all of you valuable contributors. QZX is 'sound' but would be in better shape if we could come up with one or two regular advertisers. Speaking of being sound, I wonder what it will be like after November when the majority of subscriptions expire? Some of you are struggling along trying to learn more and more about computing with amateur radio, some of you have 'conquered' the ZX and have put it to use. Others are about to (or have already) given up in frustration and I suppose some of you have moved on to other computers. If the 'quitters' are still reading QZX by chance, I would like to appeal to you to keep the ZX (and QZX) alive. If you insist on giving your ZX away, talk the happy recipient into subscribing to QZX.

Those of you that have learned the ZX well are welcomed to share your ideas, programs, etc in QZX. For the struggling beginners we will continue to provide all we can to make the trip more pleasant. Once you get machine language in your blood, you have withdrawal pains if you don't write a program occasionally.

Anyhow, we are almost up to 500 subscribers and maybe then we can (economically) go to a printer for our journal.

Sorry for the delay in getting June issue in the mail. At least I'm not like some mags and send them out a month or two in advance! The BIG July issue will be on its way as soon as I can get it together!

Unclassified

WANTED: Unclassified ads for publication in QZX. Cost is 1 cent for each keystroke (characters, blanks, etc). Payment must be included with order. This is an excellent way to sell your unwanted equipment, ask for help, find a specific program, etc. Send your ad in with payment to QZX, 2025 O' Donnell, Las Cruces, N.M. 88001.

FOR SALE: Contest Log Program, 16k. Stores 200 calls, RST, band, & mode. Routines for duplicate call check, entering call again, void last call & its data, listing calls with data, & saving log while in progress or when log is full. Connect your printer and a running hard copy is made as data is entered. $8.00 ppd. for cassette. Orders sent 1st class mail. Add $1 for foreign. For info only, send SASE. WA0UZI, Jerry Matthews, 509 Collge, Storm Lake, Iowa 50588

FOR SALE: Machine Language Programmers - 13k disassembler "DA1". Allows you to browse the powerful routines in Sinclair's 8k ROM or check your own machine code by converting it to assembler statements. It converts all 812 regular & extended opcodes to Z80 assembler mnemonics. No external tables required. Jump to any point in ROM or RAM at any time. Built-in machine language loader/editor. Tape & instructions $9.00 ppd. Martin H. Irons, 46A Magic Circle Dr., Goshen, N.Y. 10924

FOR SALE: Program for ATV enthusiasts - Generate Large Character Messages. Two programs on one tape let you generate messages 4 times normal size. One program produces 10 screens that roll vertically. The other scrolls a large message from right to left. $9.00 ppd. Martin H. Irons, 46A Magic Circle Dr., Goshen, N.Y., 10924

FOR SALE: TS1000/ZX81 ASSEMBLER - DEBUGGER - Uses standard menmonics in remark statements, has labels, symbols & 8 pseudo ops: ORG, DEFB, DEFW, DEFC, DEFS, EQU, REL, END. Assembles full instruction set at up to 1000 lines/minute, displays or prints listings. Debugger includes source code line renumbering, memory examine & modify, breakpoint with registers display. Occupies 7k. Cassette & comprehensive manual, $14.95 ppd. SCIENTIFIC SOFTWARE, 6 W. 61 Terrace, Kansas City, Mo. 64113

FOR SALE: TS1000/ZX81 DISASSEMBLER - Easy to use utility loads anywhere in memory, provides disassembled listing or hexadecimal dump to screen or printer. Includes memory search & modify. Can load & stop any program for disassembly or backup. Occupies 3.5k. Cassette & instructions, $14.95 ppd. SCIENTIFIC SOFTWARE, 6 W. 61 Terrace, Kansas City, Mo. 64113

Products in Review

This column will provide reviews of hardware 'add-ons', software, and books that are available for the Sinclair computers. Again, we will do reviews as our budget allows, or as they are loaned/donated by vendors for review. Reviews done by our subscribers will also be welcomed.

The first review is from Russ, W9CQD. It is on the Byte Back Co.'s Telephone Modem ($119.95 kit). After waiting 5 weeks due to an 'outage' of circuit boards, I received my modem kit. The boards are a very good quality with silk screened parts locations. There are two boards plus the small 'extender'

board. One is for the modem and the other is an RS232 interface. This is not a kit for beginners as it it requires some soldering dexterity. The solder mask does help a lot in preventing solder 'bridges', so if you can handle a 25 watt iron and have a good magnifying glass by all means get the kit. (An assembled version is $149.95). As for construction, I was pretty lucky and had only one open connection. Once corrected, the modem worked right away.

Apparently all metropolitan areas have 'bulletin boards' run by individuals called SYSOPs, system operators. They provide a forum for leaving or retrieving messages, presenting items of interest to computerists, and playing games. After accessing and logging on, you are given a series of commands to choose from. These enable you to read the bulletins, leave a message, or look for your own messages. (and more.Ed..) The Source & Compuserve are two commercial systems that require a membership fee and an hourly rate, but have vast quantities of information.

It is another avenue to explore in Sinclair computer usage. You will find other hams using these bulletin boards, so you may make some new friends via the telephone modem.

Following are some additional comments from the editor: (its nice to always have the last word)

Russ is correct about the 'fun' of using bulletin boards. Its not fun, however, if you don't have a local one, the toll charges add up. They have buy/sell ads, programs you can download, 'bug' fixes, and lots of other features. 'Membership' is usually free or very economical. Without a doubt, the TS1000 with the Byte Back modem & RS232 make the world's cheapest 'Smart Terminal', having capabilities that will surprise you. The 16k RAM isn't even required.

As for the modem/RS232, one of my students elected to buy the blank boards instead of the kit. It came without documentation, making construction a bit difficult to say the least. After getting the paperwork, he started 'scrounging' parts as his budget allowed. Also missing was any software needed to use the board. For an additional $10 he finally received a faint copy of some source code. When I find time, I will help him put it into the machine. I suppose if you buy the kit you receive the software on tape?? Russ is 'up and running' but it will be fall before my student gets his built and going. Purchase of just the RS232 board is possible, and would be a simple way to interface to a serial printer.

Next, we have a short review of some programs submitted by Florida Creations. Offered by Florida Creations, PO Box 16422, Jacksonville, Fla. 32245 for $3.00 is a printed listing of 2 neat arcade type games. Send a SASE & $1 for complete catalog of their products. The games are for a 16k machine. One is called Tank Zap and puts you in a tank (the kind the Army uses) and you have to shoot the bad guys. The next one is a Tic Tac Toe game. You think thats a simple game to play, have you ever tried to write the BASIC program for it? Both games have 'difficulty' levels, allowing easy games for the adults and a bit of competition for the kids. At $1.50/game, the programs look like a bargain for the game players, and I am looking forward to trying them, as soon as I find time to type them in.

Here's a review of The ZX Compiler available from Bob Berch, 19 Jacques St., Rochester, N.Y. 14620 for $ 25.00. Realizing we still have many beginners among the 'ranks', let me make a few comments about 'compilers'. As you know, each computer language has distinct features and its shortcomings. 'In the beginning', BASIC was simple to learn, slow to execute, etc. It is called an interpreter, meaning each line of code is converted to machine code as it is run, each and every time the program 'sees' each line. FORTRAN is another popular language, slanted more to the experienced programmer needing to do high speed number crunching. It usually runs in a compiled form. To use it, we must first enter and edit the program, exit the editor, compile it,(re-edit & re-compile it if errors are encountered), link it to other machine language routines and then (finally) RUN it. We are running the

machine code representation and as expected, the program runs much faster. As you probably guessed, the beginner spends a lot of time getting to the RUN stage. Good ol' BASIC, as slow as it is, is always ready to give us error messages as we go, and is kind enough to let us correct and simply re-RUN them.

Sooner or later, we get a good program running, and then begin to worry with ways to speed it up. Along came 'compilers' for BASIC. I have experimented with 3 versions for the TRS-80 and must say I have been impressed and disappointed equally. I doubt if a 'perfect' one exists for any machine. Some of them attempt to work on existing programs with minor quirks, and others require a re-write of your program. Often, the only solution is to compile a portion of your program, the part that is repetitve and slow.

Now, let's take a look at The ZX Compiler (TZC). It's fairly economical and yet powerful. If you can tolerate its limitations you will find its advantages useful. To my knowledge, it is the only one available for the ZX. You could also find it useful as a tool for learning machine language. By taking small BASIC routines, compiling them and examining the resultant machine code you could learn more about the Z-80 that does 'magic' inside the Sinclair. TZC is for a 16k ZX80 or 81 (and TS1000) with the 'updated' ROM. Two versions are available, one for 16k high memory and another for use in the 8-16k region of the memory map(if you have memory there). We must first look at the 'differences' between TZC and BASIC. 1. All variables must be integers. That means LET x=3.1423 or LET A$="Hello" is not allowed. 2. Only single-dimensioned arrays are allowed. 3. Variable names must be one or two characters long. 4. Floating point functions, like the trig functions, are not allowed. USR, PEEK, SGN, ABS, and RND are OK. 5. Other forbidden commands are LLIST, NEW, CONT, LOAD, RUN, SAVE, and CLEAR. 6. STOP, INPUT, AND, OR, INKEY$, and CHR$ work, but in slightly different ways. 7. GOTOs and GOSUBs must be constant (not computed) line numbers. 8. A couple enhancements: the ** operator is redefined as the modulus function, N MOD M. Ex. 47**16=15 . Numeric input and printing can be done in either decimal or hex. To use TZC, you load it first, it tucks away in high (or 8-16k) memory and they you load or create the BASIC program to be compiled. You then save a copy of the program before compilation, since TZC destroys your program as it works! It is like the FORTRAN compiler in this respect.If you have errors you have to re-load your program, clean it up, and try again.When done, you have a long 1 REM statement containing a small 'run-time package' and the compiled machine code for your program. You can now save this to tape or execute it by doing a RAND USR 17298. A few 'non-standard' options are available to increase TZC 's versatility, like a relocater routine. Will it work for your program? If you are able to get along without any strings, don't need 'decimal' numbers, and can control your integer numbers (limited between -32768 to +32767) it may be for you. You have to watch out for the wrap around, overflow, truncation, etc and will get strange answers if you aren't careful. Or perhaps, a portion of your program, especially graphics or long FOR/NEXT loops are good candidates for TZC. Bob Berch also offers The ZX Compiler in EPROM, by the way.

As for documentation, it comes with 20 (half-size) pages, done very nicely. It is easy to follow, and has some examples. It even gives you an idea of how a BASIC statement is converted into Z80 code. Excellent documentation.

Does it work? YOU BET IT DOES! I took my simple bubble sort demo in previous QZX issues, made a few simple conversions and tried it with TZC. All I had to do was put the DIM statement at the beginning, change the string input statements to input of a number (ie 1/2 for R/D), change a few variable names to two letters, and believe it or not, it compiled without errors the first time. As for speed improvements (which is what its all about), I tried a sort of 100 numbers in a descending array. In the slow mode it took 34 seconds (compiled) as opposed to OVER 25 MINUTES (I gave up counting) for the 'regular' version (un

compiled). In the fast mode the compiled run took 5 seconds compared to 265 seconds in the original program. Quite a speed improvement I would say. I am definitely looking forward to 'playing' with The ZX Compiler some more and highly recommend it.

QZX Friends

Here's your chance to let your ambitions and accomplishments be known. Feel free to let us know what you are up to, and to contact those 'doing your thing'.

WB8UJB - Bob is an Extra Class who has been a ham since he was 12. He is an E.C. in Michigan and is employed as a deputy sheriff. He has a TS1000 with 32K Memopak.

K5MIL - Bill has a ZX81 with lots of Memotek add-ons (32K ROM & printer). He is pleased with their equipment and plans to add their keyboard soon. He says NU4V (of CW interface fame) is working on RTTY programs and that he hangs out on 3.838 MHz around 0330Z.

KA0OOQ - Jerry has a ZX81 and big keyboard. He runs NU4V's cw program and hangs out on 7.140 MHz looking for other ZX81 users.

VE1BRA - Murray is a new subscriber with a ZX81, 16k, TS2040, homebrew keyboard, and NU4V CWSS system. He is an elec. engineer, interested in antenna design & RTTY. He sent us a 'Loaded Dipole Design' Program to be printed soon.

QZX Net Info

Don't forget to send in corrections, deletions, etc. Being an unemployed college professor (for the summer) gives me no excuse for missing the nets-- Look for me there.. Editor- W4GHV. Russ, where are you?? We miss your reports!

Freq.	Time	Day	Source	Location
7.240	1700Z	Sun	KQ2F	East coast
146.67	0230Z	Tue	K5XY	Manhattan,NY
146.28	0000Z	Tue	N3ADF	Wash, DC
147.84	0200Z	Wed	WB5HVS	New Orleans
146.16	0000Z	Thu	N1CB	Vermont/NH
3.980	0100Z	Sat	N3CJP	East coast
14.345	0100Z	Thu	NU4V	USA
14.329	2000Z	Sun	W9CQD	USA
7.245	0001Z	Wed	W9CQD	USA
7.235	1800Z	Sat	W6AMW	West coast
7.228	1900Z	Sat	K4KEP	East coast
7.228	1900Z	Sun	K4KEP	East coast
146.04	0100Z	Thu	KB3YT	Pittsburgh

Bits & Bytes

This column will try to track and document the quirks, fixes, and unique modifications done to the Sinclair computers. Let's hear from you.

Here's what we have this month:

23. Old 35 mm film cans are just the right size for storing printer tapes from the Mindware 16 column printer.
24. KA0OOQ has reported that he had trouble with NU4V's CW program when he installed a new keyboard. He cured the problem by installing 10k pull down resistors on the five data lines KBD0-KBD4. He doesn't say why he had trouble but he does say that the CSWW program now runs perfectly.

Miscellaneous Comments

Following are some 'camera ready' comments from John, KB4XH, with underlining emphasis supplied by your editor. The good words on QZX, and about XLR8 are appreciated. Evidently I wasn't off base with my hasty opinion / recommendation of XLR8.

K5XY ES W4GHV/5
DE KB4XH-JOHN-MIAMI,FL.
TNX FOR YOUR EXCELLENT WORK ON--> Q Z X <--.IT IS THE BEST PUBLICATION GOING FOR ZX/TIMEX USERS.
STARTED YR. AGO WITH A KIT, ADDED 16K RAM,ZX PRINTER AND I HAVE IT IN THE E-Z KEY ENCLOSURE.NATURALLY IT NOW HAS SWITCHES FOR POWER,LOAD AND SAVE. NIFTY "LED" INDICATOR TOO.LOVE THAT "TACTILE FEEL".FOUND THE E-Z KEY AD IN YOUR DEC. Q Z X. OH,YES I HAVE INSTALLED IN THE RIG THE EPROM VERSION OF Z-XLR8 AND NOW CONSIDER IT A NECESSITY . ALEX,SINCE YOU ARE GOING ON A VACATION BEFORE YOU REVIEW THE Z-XLR8 I WILL ENCLOSE A SHORT ACCOUNT OF MY EXPERIENCE WITH THE EPROM,BUT FIRST I WANT TO SAY THANKS TO MR.R.J.LEE-W3ZQN FOR THE WONDERFUL PROGRAM TYPE "TYPE" IS THE BEST YET FOR THE ZX PRINTER.
AGAIN TNX DE KB4XH
JOHN

****
Z-XLR8
****

ALEX: THIS IS NOT INTENDED TO BE A "REVIEW",WILL LEAVE THE EXACT DETAIL TO YOUR FINE REPORTING. I DO WANT TO OFFER ENCOURAGEMENT TO THOSE WHO MAY BE A LITTLE BIT RELUCTANT TO TRY THE "EPROM VERSION".BELIEVE ME ITS THE ONLY WAY TO GO.

I AM SURE HAMS WILL HAVE NO PROBLEM,ESPECIALLY THE "PRE-BASH-TYPE".HI SERIOUSLY,ITS EASY IF YOU CAN READ SCHEMATIC,FOLLOW FOIL ON P/C BOARD(BOTH SIDES)AND CAN SOLDER.

I HAVE INSTALLED SEVERAL.ENCOUNTERED ALL LISTED VERSIONS OF ZX81/TIMEX1000. NO FAILURES YET. I CAN DO IT IN 30 MIN.AND THAT INCLUDES 5 MIN TO LET THE EPOXY SET.

THE DECODING CIRCUIT IS EASY, JUST PUT THE 74LS00 AND THE 74LS32 BACK TO BACK,CONNECT PROPER PINS AND SOLDER,EPOXY UNIT TO TOP OF EPROM (WHEN SET)AND CONNECT PROPER PINS TO REQUIRED POINTS ON P/C.

I PREFER THE PARTIALLY DECODED CIRCUIT AS THERE ARE 3 FEWER POINT TO POINTS ON P/C,ALSO FEWER PINS TO CONNECT ON BACK TO BACK IC/S.THIS CIRCUIT ENABLES EPROM FOR MREQ BETWEEN 8192 AND 16383.

IF YOU PLAN USE FOR (SUCH AS HI RES GRAPHICS)THEN THERE IS AN ADVANTAGE IN THE FULLY DECODED CIRCUIT.

YES,ALEX,IT LOADS/SAVES GAZETTEER IN LESS THAN A MIN. AND THE (IL)INDEX LOAD SHOWS IT TO BE 16246 IN LENGTH.

JUST A HINT FOR THOSE DISCONNECTING KEYBOARD RIBBON FOR FIRST TIME.--IT IS EASILY TORN OR KINKED--. RECCOMMEND USING STIFF PAPER "BACKING" (EACH SIDE) BETWEEN THUMB AND FINGER AND APPLY YOUR FORCE "CENTRAL" ON RIBBON,RATHER THAN ON TENDER EDGE. IF YOU DO TEAR OR KINK (BADLY) JUST USE SISSORS, CUT OFF AND RESHAPE AS BEFORE TO FIT SOCKETS.

"NOTE" IF YOUR SISSORS EAT UP TOO MUCH, THEN THIS IS A GOOD TIME TO ADD A LARGER KEYBOARD. MANY OF THEM COME WITH A MUCH BETTER RIBBON AND IS EASY TO PLUG INTO THE SOCKETS.

NOW,LET US ALL THANK BRAD BENNET ET AL AT ADVANCED INTERFACE DESIGNS FOR ONE OF THE GREATEST CONTRIBUTATIONS TO ZX/TIMEX FUN.

I THINK "GOOD MIDDLE OF THE ROAD" PROGRAMED VALUES ARE :

TIMING VALUE 15
CALIBRATION VALUE 234

I FIND IT COMPLETELY RELIABLE FOR THE AVERAGE RIG.

I BELIEVE THIS IS THE BEST THING SINCE "4 WHEEL BRAKES" HI. BY THE WAY, ALEX,DO YOU REMEMBER ---CAPT. EDDIE RICKENBACKER---? HE INVENTED "4 WHEEL BRAKES". I REMEMBER. I AM RETIRED AIRLINE PILOT-AGE 71.

GUD LUK ES (((73))) DE KB4XH.?
--> JOHN <--

73, W4GHV and K5XY

QZX presents the best software and hardware projects available for the radio amateur. While the contents are believed to be accurate, no warranty is extended on any program or project. No investigation has been made of the claims or reputation of any advertiser. It would be greatly appreciated if all correspondance requiring an answer would be accompanied by a self-stamped envelope (SASE). Copyright by QZX, 1983. All rights reserved, Photocopying by permission only.

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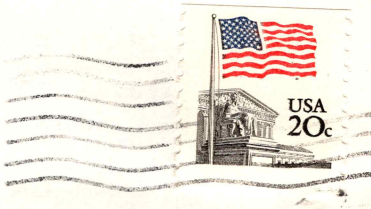

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